Unique focusing mount of new lens covers range from 2 inches when fully extended (left) to infinity when retracted. Model E lens (right) has near-focusing limit of 4 inches, whereas double-helical gearing of Model D lens permits closer limit (distances measured from front of lens mount).

Typical single-lens reflex camera equipped with Model D Makro-Kilar lens affords precise groundglass focusing over entire range from extreme close-up (1:1.1 image-subject size ratio) to infinity.

Makro-Kilar lens with Mannesmann Ringblitz (circular) flashtube attached to its front end is used on single-lens reflex camera, fully extended, for shooting close-up of specimen held in forceps.
Kilfitt lens of radical design is first to permit continuous focusing from infinity to several inches away, without auxiliary bellows or extension tubes—fits most single-lens reflex cameras

By GEORGE BERKOWITZ

The mere concept of the new 40-mm, f/3.5 Makro-Kilar is exciting. A lens that will take normal, close-up, and wide-angle pictures without requiring supplementary attachments is, to say the least, a startling and almost unbelievable innovation. The idea of a complete all-in-one lens with which one can be prepared for any type of photography is an irresistible thought. What a picnic photography could be with such a lens!

The Makro-Kilar does offer this remarkable flexibility, but with certain limitations. It won't magnify an image more than slightly under a 1 to 1 ratio when used without supplementary attachments. It isn't the widest-angle lens available. Nevertheless, it does combine in one lightweight optical unit a number of important features often desired by photographers, which makes it a treasured addition to the gadget bag if not a candidate for one's all-around favorite lens.

Unfortunately, the versatile Makro-Kilar lens is offered in the American market today with fittings only for 35-mm single-lens reflex cameras: specifically, the Alpa, Exa, Exakta, Mecaflex, Pentax (also Contax D, Contax S, and Hexacon), and the Rectaflex. Because the manufacturer envisions the most extensive use of the lens in close-up photography (macrophotography) where precise groundglass focusing through the taking lens is most desirable, his reluctance to spread his production to other types of cameras is understandable.

What's so special about the Makro-Kilar in the field of close-up photography? A standard lens for a 35-mm camera, such as the 50-mm (2-inch) Tessar, has a normal focusing range of infinity to about 20 inches. Any object closer than 20 inches cannot be photographed as a sharp image unless the camera-lens setup is altered to extend the focusing range.

Extension tubes or bellows usually are inserted between the lens and camera body, or supplementary lenses are added to the lens to increase the focusing range. These devices are efficient, but they are often awkward to handle, take time to get on and off, and require measurements so that the necessary increases in exposure time can be computed.

A lens that would permit such an extension without requiring additional attachments (Continued on page 106)
New: Makro-Kilar Lens
(Continued from page 87)

has been theoretically possible for years, but has not been available because of the mechanical problem of mount design. Heinz Kilfft, head of Kilfft Optische Fabrik of Munich, Germany, successfully solved the problem with the Makro-Kilar late in 1953. In fact, he solved it in two weeks.

The Makro-Kilar actually is available in two models. The lens elements are the same in both versions, but the mounts are different. Makro-Kilar E (E meaning simple extension) permits continuous helical-mount focusing from infinity to about 5 inches from the subject, giving a maximum image-to-subject ratio of 1:2 (the image on the film is half the size of the subject).

The Makro-Kilar D lens (D meaning double extension) permits continuous focusing from infinity to about 3 inches, giving a maximum image-to-subject ratio of 1:1.1. The double extension is achieved by means of two ingeniously designed helical gears, as contrasted with the single helical gear of the Model E. Incidentally, all the lens elements move as a unit as the subject is brought in focus.

Many photographers may be confused by the fact that the lens has defined the near-focusing limits of the Model E and Model D lenses at 4 and 2 inches respectively. For in doing this, he departed from customary practice.

Instead of basing his measurements on the closest distance between subject and lens, the distance from the subject to the front of the lens mount, he has used the closest distance between subject and the front of the lens mount. This becomes apparent when the maximum image-to-subject ratio of 1:1.1 is sought with model D. Using Kilfft's method, the 40-mm lens would be assumed to be only 50 mm from the subject. In actual practice, the lens (front element) must be away from the subject a distance equal to twice the focal length of the lens. In this case, consequently, the distance would be roughly twice 40 mm, or 80 mm.

Since there is roughly 30 mm of sunshade projecting from the front element of the Makro-Kilar mount, this figure added to 50 mm gives us 80 mm, the right answer. Nevertheless, the factor must be kept in mind when computing depth of field for close-ups.

The focusing scale of the lens also conforms to Kilfft's new approach. It indicates the distance between the subject and the front of the lens mount rather than between the subject and the front lens element, and therefore the mount itself is used as a guide.

The mount is designed with consider-
it is made in cooperation with Kilfitt. This is the first optical venture of any significance in the tiny European principality and it represents the desire of the Prince of Liechtenstein to bring industry to his country.

Incidentally, prior to the perfection of the new lens, Kilfitt’s inventiveness had gained him recognition for the design of the Robot I camera, the Mecaflex (a small, 1x1-in. negative single-lens reflex camera not yet available here), a high-speed 35-mm camera with speeds from 1/1,000 to 1/4,000 second, an automatic 16-mm camera, and the Kilfitt line of lenses for 35-mm still cameras.

The two models of the Makro-Kilar lens along with the entire Kilfitt line are distributed in the United States by Kling Photo Corporation, New York. The Model E lens is priced at $89.95 and the Model D at $114.95.

Of interest to medical photographers is the fact that a ring-flash attachment has been designed for the Makro-Kilar. Produced by Mannesmann in Westhofen bei Köln, Germany, this unit, called the Ringblitz, is not yet available here. It can be used for close-ups from about 5 to 55 cm (Kilfitt system) and for color.
NEW MAKRO-KILAR LENS

WHAT'S YOUR DREAM lens? A needle sharp f/1 which you could use for wide-angle, normal and telephoto shots at will? All this in one neat package of optical glass which you could focus on a bug at two inches or a mountain at infinity—with generous depth of field at both extremes? This lens hasn't been designed yet, but the closest thing to it is the new, compact, f/3.5, 40mm Makro-Kilar which will fit most popular 35mm single-lens reflex cameras accepting interchangeable lenses.

How close does this lens come to dream specifications? The most remarkable thing about the Makro-Kilar is the ease with which it brings new scope to picture making. Just one full turn of the focusing ring lets you roam from infinity down to two inches from the front of the lens mount with the Model D, or down to four inches with the Model E. There are no attachments to get in your way or slow you down. You can look at anything in your scene—the entire view or a tiny significant detail nearby—and record it within a matter of seconds.

When you start shooting you find the 40mm focal length is a happy compromise—in a sense is two lenses in one. It takes in a wider angle of view than a "normal" 50mm lens found on the majority of 35mm cameras—56 degrees diagonally, instead of the more usual 45 to 48—but it doesn't have great distortion around the edges which is characteristic of an extreme wide-angle lens. And there's a greater zone of sharpness at all distances with the Makro-Kilar than with a normal lens. Even close-up with a slightly curved subject you have a reasonable working depth (see photograph top, right, on page 87).

True you can't take telephoto pictures with the Makro-Kilar. You don't have the dream f 1 aperture. But Modern's tests show that the Makro-Kilar lens is needle sharp. And at the maximum opening, f/3.5, it's easy to shoot in low light situations if you use the new fast black-and-white films. Outdoors, aside from close-ups, you can put depth of field and semi-wide angle of view to work creatively to make pictures like the one at right, photographed with the Model D on a Pentax camera at 1/8 and 1/500 with Kodak Super-XX film. You can get either model of the lens for this camera as well as for the Alpa, Exa, Exakta, Rectaflex (see bottom of page 87), Contax D, Contax S, and Hexacon. Price of Model D, $114.95; Model E, $89.95. Also available for Models D and E is a Series VII screw-in filter adapter, which has a lens shade ($4.95). Ordinarily no sun shade is needed because the mount extends over an inch beyond the front lens element. A similar lens for 2⅓ x 2⅓ single-lens reflex cameras is in the works.

Why half the dream comes true

Both Model D and E Makro-Kilar lenses are optically identical—a Tesseract-type four-element, compound triplet. A single element is placed in front, another in the center, and two elements cemented together are at the rear. But the secret of the continuous focusing down to extreme close-ups lies in the lens mount.

Imagine one threaded, light-weight alloy sleeve within another, and you've a pretty good idea of the double-helical mount construction of the Model D. At infinity one black sleeve, or helical mount, is completely within the other. When you focus close-up the front mount is extended, as shown on page 87. Model E, which focuses to four inches from the front of the lens mount, requires less extension and has only a single threaded sleeve. When mounts were extended all the way on the two models we tested, distance markings were slightly below two and four inches respectively—permitting us to move in a fraction closer than the lenses indicate. Designed by Heinz Kilfit of Kilfit Optische Fabrik, Munich, the lenses are made in Liechtenstein by Kamberbau Anstalt Vaduz, in cooperation with Kilfit.
Is there an all-purpose lens? Not yet! But the remarkable Makro-Kilar for 35mm single-lens reflex cameras may begin a new trend in lens-mount design. It may be the first step towards a day when each camera requires only a single versatile lens for all shooting.
You could put it another way and say that both models come with built-in focusing extension tubes. But the mount isn’t the only ingenious device on the Makro-Kilar. Several useful scales are engraved on satin chrome-finished aluminum. As everyone who’s ever made extreme close-ups knows, some extra exposure is required. At what distances is it needed, and how much extra exposure must you give? Pocket charts and calculators can be bought, but with the Makro-Kilar things are much simpler. For distance settings of about 7 inches or less, the exposure increase scale on the lens gives you a direct reading. Using the closest figure is sufficiently accurate for any ordinary shooting. Just open up half a stop for 1.5X exposure factor, a full stop for 2X, 1 3/4 stops for 3.5X, or change your shutter speed accordingly.

Another direct reading scale compares film image size to subject size at various close-up distances. For example, when Model D is set at 6.3 inches (16 cm), page 130, the image on the film will be a little less than one-third the size of the subject (1:3.5 ratio). You get a nearly life-size image (1:1.1 ratio) when the Model D is set at two inches, and a half-life-size image (1:2 ratio) when the Model E Makro-Kilar lens is set at four inches. Finally, all distance markings (from front of lens mount to subject) are indicated in both inch-foot and metric systems; and for convenience there are two sets of f-numbers (f/3.5 to f/22) engraved on the mount so one set is always visible.

Several things impressed Harold Feinstein, who made the pictures for this article. “The best thing about the Makro-Kilar,” he told us, “is that it frees you—lets your imagination run wild. Usually a photographer’s mind works within the limitations of his equipment. Now, I can shoot at a distance or move in quickly. By being able to work close so easily I’ve begun to notice detail more than ever before—small things like a piece of birch bark (top, right, opposite page), hands, or individual features in a face.

“What’s more, I can have my cake and eat it, too. The usual close-up of a face doesn’t include much background. Yet in the picture of the boy (below), made only two feet from the subject with the Model D, I was able to keep the head large and at the same time suggest enough of the background to relate the (Continued on page 130)

PORTRAITS. You can move in close with the Makro-Kilar for a large head and still include enough background to relate subject to environment. Distance here was about 2 feet. Exposure: f/3.5 and 1/50 second, at sunset.
NIGHT SHOTS. It's easy to focus quickly with the Makro-Kilar, even under low-light conditions, because the lens creates an unusually bright image in a prism finder. And with new, fast black-and-white films, the f/3.5 speed of the lens is no handicap. 1/20, f/3.5, Kodak Tri-X.

CLOSE-UPS. Not an eye, but part of a birch tree photographed seven inches away. Wide open at f/3.5 (1/100) the Makro-Kilar had sufficient zone of sharpness to cover the area. Corners on the enlargement were reasonably sharp. Like all Feinstein’s pictures on these pages, the shot was made with a Makro-Kilar Model D and a Pentacon 35mm single-lens reflex camera.

THE MAKRO-KILAR is available for most 35mm single-lens reflex cameras which take interchangeable lenses. It is remarkable because of mount design which enables the user to focus Model D (shown extended, left, below) from infinity to 2 in. with one turn of the focusing ring, and Model E as close as 4 in. from the front of the lens mount. Both are lightweight, and compact when extended or closed (see Model D, right, below, set at infinity). They have the same 4-element, 40mm, f/3.5 lens, distance scales in inches and meters, two aperture scales, exposure increase markings, and an image ratio scale.
NEW MAKRO-KILAR LENS (Continued from page 86)

boy to his environment. He’s not just an interesting boy, he’s an interesting boy in a specific place. To see what I mean try covering the buildings on either side with your hands, leaving only the head. There are times when just a head is all a photographer wants. But he should have the freedom to include more, to reinforce his feeling about the subject by including background when he needs it. And the semi-wide angle of the Makro-Kilar gives him this freedom when shooting close-up.

What about distortion when your lens is close—practically eye-to-eye with the subject? The classic answer is to move back, preferably with a long-focus or telephoto lens in order to keep the image large while gaining proper perspective. Feinstein’s views are somewhat unconventional. He feels that the Makro-Kilar shows things more as the eye actually sees them close-up. The eye “distorts,” too, at a short range. So with the Makro-Kilar Feinstein tries only to keep the distortion within limits—in order to give the viewer of the print the same feeling the photographer had while making the picture. In the close-up picture of the boy (page 86) Feinstein used one simple device to keep the head from being too noticeably misshapen—he took a three-quarter view, instead of a full face shot. The buildings in the background are purposely out of focus, though they could have been made sharper if Feinstein had felt this was desirable.

For low-light shooting

On the mechanical side, Feinstein liked the ease with which he could focus even in poor light. The f/3.5 Makro-Kilar gave him a brighter, more contrasty image in his prism, eye-level viewfinder than when he used an ordinary lens at f/2. “And change in focus,” he says, “is so apparent that there’s no doubt about when the image does or doesn’t look sharp.” Why? You only need one full turn of the Model D’s focusing ring to go from infinity to two inches—and a turn of a little over a quarter of an inch takes you from infinity to 3.3 feet. All these factors, plus the lens’ depth of field, are why Feinstein uses the f/3.5 Makro-Kilar by choice (together with the new, fast black-and-white films) under even the poorest lighting conditions.

“Everything about the Makro-Kilar is easy to handle,” continues Feinstein, “including the wide, milled rubber focusing ring which can be used while wearing gloves. The lens was designed with the photographer in mind, and offers so much that lack of click stops, pre-set diaphragm, or engraved depth of field scale seems unimportant. For instance, with the lens stopped down to f/8 for the picture of the boys (page 85), I could see well enough to focus and determine just how much was sharp. As I looked through my prism viewer I could keep an eye on all the little things that were going on.”

Modern’s only criticisms of the design come at this point, and they are minor. First, f/stop and focusing rings move so easily that it is possible to change settings accidentally. Though the aperture ring is purposely designed to move easily so you can change aperture

Four useful scales are engraved on both Makro-Kilar models. Reading from bottom to top, on the Model D, above, distance is set for 16cm, or 6.3 inches. Image ratio at that distance is about 1:3.5, and exposure should be increased approximately 1.5X.

ture without altering focus setting, we found it necessary to hold the focusing ring while changing stops.

Second, click stops, pre-set diaphragm, and engraved depth of field scale have not been included for technical reasons. The pre-set diaphragm would have made the lens too bulky; click stops would have necessitated reducing the easy action of the focusing ring; and an engraved depth of field scale posed problems yet to be solved, considering the nature of the lens and its mount.

You may find some occasions when you miss these features—but fewer than you might think. In some outdoor situations you may need to focus wide-open and stop down to f/11 or 16 later. There’s no doubt that taking the camera away from the eye to do this does slow down shooting.

Though depth can be observed with a fair amount of reliability through a prism eye-level viewer, an engraved depth of field scale would be a useful addition for some close-ups and available light pictures, as well as for a few outdoor shots made at lens openings smaller than f/8. To fill this need the importer (Kling Photo Corp., 235 Fourth Ave., New York, N.Y.), packs a depth-of-field chart with each lens.

Simultaneously with testing the lens in actual practice, Modern sent both models (D and E) out for a thorough optical bench test. Each received a rating of “better” than many other top-grade lenses available for 35mm cameras. The Model E we had tested was sharp from edge to edge at f 3.5, and had virtually no flare (light reaching the film as a result of internal reflections within the lens). The particular Model D tested did show a slight amount of flare at the same stop, but this cleared completely at f/4. Except for this, both models had fine contrast and resolution at all stops up to about f 6, where sharpness began to fall off slightly (a normal phenomenon in many lenses for 35mm cameras). The critical aperture (at which a lens makes its sharpest pictures) was between f 5.6 and f 8 for both models.

Not bad! Though the Makro-Kilar may not be the all-purpose lens you dream about, until that comes along you can get more freedom and more scope with this lens than with the ordinary type. You may even find, like Harold Feinstein, that it alters your whole concept of a picture story.

“All of a sudden, out of the blue. I can really shoot close-ups journalistically to record significant detail which adds punch and variety. I can move in on a pair of hands to see what they are writing, then get the overall scene seconds later. Close-ups are now so easy,” Feinstein adds. “That I feel they will become an important part of almost any picture story.”—CORA WRIGHT.

NEW MAKRO-KILAR LENS (Continued from page 130)
A new f/2.8 40mm Makro-Kilar which focuses from two inches to infinity is the latest addition from Kilfitt

TWO INCHES TO INFINITY

WHEN Kilfitt first introduced its Makro-Kilar lenses two-and-a-half years ago, they caused quite a sensation in photographic circles. The f/3.5 40mm optic that focuses from 2 inches to infinity was immediately welcomed by photographers who needed such a lens for closeup work. A short time later a 90mm lens with focusing range from 8 inches to infinity was also introduced. Since that time the Makro-Kilars have established themselves as valuable tools.

In keeping with the trend toward fast optics, Kilfitt has now unveiled a new Makro-Kilar—the f/2.8 40mm. Like its predecessor, it comes in two mounts, the D which focuses from 2 inches to infinity and the E which ranges from 4 inches to infinity. The lens has an aperture pre-selector mechanism and filter retaining cone; magnification scale and exposure increase scale for hyper-closeup photography. The angle of view is approximately 54 degrees. The lens can be used for standard, wide angle and closeup pictures without extension bellows or tubes or supplementary lenses.

The lens is designed for single-lens reflex cameras and will fit most of them. It is important to note that the lens lies deep in the mount, which serves as a hood. The focusing distance is measured from the mount to the subject, not from the actual lens surface. Price of the 40mm f/2.8 in D mount is $139.50, with E mount it costs $119.50.

This new Makro-Kilar is a welcome addition to those already available and should be useful.

CHURCH DOOR photographed from a distance of 25 feet with the 40mm f/2.8 Makro-Kilar takes in the entire structure of the door.

MOVING IN to a distance only a few inches from the door handle, the lens racks out to show detail, impossible with other lenses.